

***Amendments to the Claims***

This listing of claims will replace all prior versions, and listings of claims in the application.

1-10. (cancelled).

11. (previously presented) An isolated polypeptide molecule comprising an amino acid sequence selected from the group consisting of:

- a. amino acids from about 1 to about 908 in SEQ ID NO:5;
- b. amino acids from about 1 to about 859 in SEQ ID NO:6;
- c. amino acids from about 1 to about 912 in SEQ ID NO:7;
- d. amino acids from about 1 to about 853 in SEQ ID NO:8; and
- e. amino acids from about 1 to about 689 in SEQ ID NO:85;
- f. amino acids from about 1 to about 689 in SEQ ID NO:86; and
- g. a polypeptide sequence at least about 90% identical to the amino acid

sequence of (a), (b), (c), (d), (e) or (f).

12. (previously presented) An isolated polypeptide molecule, wherein except for at least one conservative amino acid substitution said polypeptide has a sequence selected from the group consisting of:

- a. amino acids from about 1 to about 908 in SEQ ID NO:5;
- b. amino acids from about 1 to about 859 in SEQ ID NO:6;
- c. amino acids from about 1 to about 912 in SEQ ID NO:7;

- d. amino acids from about 1 to about 853 in SEQ ID NO:8; and
- e. amino acids from about 1 to about 689 in SEQ ID NO:85;
- f. amino acids from about 1 to about 689 in SEQ ID NO:86; and
- g. a polypeptide sequence at least about 90% identical to the amino acid sequence of (a), (b), (c), (d), (e) or (f).

13. (cancelled).

14. (previously presented) A method for diagnosing or determining a susceptibility to neoplastic disorders, comprising:

- a. assaying a *de novo* DNA cytosine methyltransferase expression level in mammalian cells or body fluid; and
- b. comparing said *de novo* DNA cytosine methyltransferase expression level with a standard *de novo* DNA cytosine methyltransferase expression level whereby an increase or decrease in said *de novo* DNA cytosine methyltransferase expression level over said standard is indicative of an increased or decreased susceptibility to a neoplastic disorder.

15. (previously presented) The method of Claim 14, wherein said *de novo* DNA cytosine methyltransferase expression level is assayed by detecting *de novo* DNA cytosine methyltransferase protein with an antibody.

16. (previously presented) The method of Claim 14, wherein said *de novo* DNA cytosine methyltransferase expression level is assayed by detecting *de novo* DNA cytosine methyltransferase mRNA.
17. (previously presented) An isolated *de novo* DNA cytosine methyltransferase polypeptide having the amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. 209933.
18. (previously presented) An isolated *de novo* DNA cytosine methyltransferase polypeptide having the amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. 209934.
19. (previously presented) An isolated *de novo* DNA cytosine methyltransferase polypeptide having the amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. 98809.
20. (previously presented) An isolated *de novo* DNA cytosine methyltransferase polypeptide having the amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. 326637.
21. (previously presented) An isolated *de novo* DNA cytosine methyltransferase Dnmt3b polypeptide wherein, except for at least one conservative amino acid substitution, said polypeptide has a sequence selected from the group consisting of:

- a. amino acid residues 1 to 362 and 383 to 859 from SEQ ID NO:2; and
- b. amino acid residues 1 to 362 and 383 to 749 and 813 to 859 from SEQ ID NO:2.

22. (previously presented) An isolated *de novo* DNA cytosine methyltransferase DNMT3B polypeptide wherein, except for at least one conservative amino acid substitution, said polypeptide has a sequence selected from the group consisting of:

- a. amino acid residues 1 to 355 and 376 to 853 from SEQ ID NO:4; and
- b. amino acid residues 1 to 355 and 376 to 743 and 807 to 853 from SEQ ID NO:4.

23. (previously presented) A method of screening for an agonist or antagonist of DNMT3 DNA cytosine methyltransferase activity comprising:

- a. contacting a substrate to a DNMT3 DNA cytosine methyltransferase protein or polypeptide in the presence of a putative agonist or antagonist; and
- b. assaying the activity of said agonist or said antagonist by determining at least one of the following:
  - (i) binding of said agonist or said antagonist to said DNMT3 DNA cytosine methyltransferase protein or polypeptide; and
  - (ii) determining the activity of said to said DNMT3 DNA cytosine methyltransferase protein or polypeptide in the presence of said agonist or said antagonist.

24-37. (cancelled).

38. (previously presented) An isolated nucleic acid molecule comprising a polynucleotide selected from the group consisting of:

- a. a polynucleotide sequence encoding a polypeptide comprising amino acids from about 1 to about 689 in SEQ ID NO:85;
- b. a polynucleotide sequence encoding a polypeptide comprising amino acids from about 1 to about 689 in SEQ ID NO:86;
- c. a polynucleotide sequence that is at least 95% identical to the polynucleotide sequence of (a) or (b); and
- d. a polynucleotide sequence complementary to the polynucleotide sequence of (a), (b) or (c).

39. (previously presented) The nucleic acid molecule of claim 38, wherein said polynucleotide is that of part (a).

40. (previously presented) The nucleic acid molecule of claim 38, wherein said polynucleotide is that of part (b).

41. (previously presented) The nucleic acid molecule of claim 38, wherein said polynucleotide is that of part (c).

42. (previously presented) The nucleic acid molecule of claim 38, wherein said polynucleotide is that of part (d).

43. (previously presented) An isolated *de novo* DNA cytosine methyltransferase polypeptide having the amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. PTA-4611.

44. (previously presented) An isolated *de novo* DNA cytosine methyltransferase polypeptide having the amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. PTA-4610.

45. (previously presented) A method of making a recombinant vector comprising inserting an isolated nucleic acid molecule of Claim 38 into a vector selected from a group consisting of:

- a. a DNA vector; and
- b. an RNA vector.

46. (previously presented) A recombinant vector comprising the isolated nucleic acid molecule of Claim 38.

47. (previously presented) A method of making a recombinant host cell comprising introducing the recombinant vector of Claim 46 into a host cell.

48. (previously presented) A recombinant host cell comprising the vector of Claim 46.

49. (previously presented) A method for producing a *de novo* DNA cytosine methyltransferase polypeptide, comprising culturing the recombinant host cell of Claim 48 under conditions such that said polypeptide is expressed and recovering said polypeptide.

50. (previously presented) A method for in vitro *de novo* methylation of DNA, comprising:

- a. contacting said DNA with an effective amount of a *de novo* DNA cytosine methyltransferase polypeptide encoded by the polynucleotide of claim 38;
  - b. providing an appropriately buffered solution with substrate and cofactors;
- and
- c. purifying said DNA.

51. (previously presented) An isolated nucleic acid molecule comprising a polynucleotide selected from the group consisting of:

- a. a polynucleotide sequence encoding mouse Dnmt3a2 polypeptide contained in ATCC Deposit No. PTA-4611;
- b. a polynucleotide sequence encoding human DNMT3A2 polypeptide contained in ATCC Deposit No. PTA-4610;

c. a polynucleotide sequence at least 95% identical to the polynucleotide sequence of (a) or (b); and

d. a polynucleotide sequence complementary to the polynucleotide sequence of (a), (b) or (c).

52. (previously presented) The nucleic acid molecule of claim 51, wherein said polynucleotide is that of part (a).

53. (previously presented) The nucleic acid molecule of claim 51, wherein said polynucleotide is that of part (b).

54. (previously presented) The nucleic acid molecule of claim 51, wherein said polynucleotide is that of part (c).

55. (previously presented) The nucleic acid molecule of claim 51, wherein said polynucleotide is that of part (d).